

Quarterly Journal
of Conchology
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THE
QUARTERLY JOURNAL
 OF
CONCHOLOGY.

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THE *Quarterly Journal of Conchology.*

The Introduction published in the First Number sufficiently explains the objects the Editors have in view; but it will, perhaps, not be superfluous to hope that every Conchologist who may be in possession of information, will freely communicate it, and thereby contribute his or her share to render the Journal a full and accurate record of the science which it is founded to promote.

Any profits arising from the Journal will be devoted to its improvement; and illustrations will be given when the interests of the Journal, and its pecuniary success, will admit.

No notice will be taken of anonymous contributions; and authors alone will be held responsible for the opinions expressed in their articles.

Books Received.— Journal de Conchyliologie; edited by MM. Crosse and Fischer; July 1875; 8vo, pp. 76 and 4 plates. Notes supplémentaires sur les Mollusques Terrestres de la Jamaïque; by C. P. Gloyne; 1875, 8vo, pp. 12. Descriptions of Ten New species of Shells; by G. B. Sowerby junr, 1875, with plate.

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P. obscurum Drap.

P. Nouleti Dupuy.

P. Arriensis St. Simon.

Bithynia Reynesii Dupuy.

Belgrandia Bourguignati St. Simon.

B. gibba Drap.

Paludinella Guranensis St. Simon.

P. Companyoni Bourgt.

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mis thin, yellowish ; spire rather small, exserted ; whorls convex, aperture rather wide ; columella thickened, suffused with brown, outer lip somewhat thickened, scarcely reflexed.

Hab. Catamarca (on the Andes of Peru).

A fine species of the type represented by *A. columellaris*.

[The original paper is accompanied by a coloured plate, to which the references in this article apply.—ED. Q.J.C.]

ON THE INTRODUCTION OF PLANORBIS DILATATUS (GOULD.) INTO THE BRITISH ISLES.

Mr. THOS. ROGERS read a paper before the Natural History Section of the Manchester Literary and Philosophical Society, on April 13th, 1870, upon the introduction of this species, which he discovered in June, 1869, adhering to the stones immediately below the surface of the water in the Bolton canal at Pendleton, and in close proximity to the blowing room refuse discharge, and warm water discharge from the engines of Messrs. Armitage's cotton mill. He also afterwards found the same species under similar conditions in the canal adjoining the mills of Messrs. Rylands, at Gorton. After examining all the circumstances under which the Mollusk was found, he was led to believe that its introduction into this country was by means of American cotton, which had been used for such like war purposes as barricades for steamboats or river defences by the soldiers in the civil war during the presidency of Abraham Lincoln, and which had been accidentally submerged in water and redried with the fry or spawn masses of the Planorbis attached to its fibres previous to its exportation to England, and this ultimately finding its way with the cotton refuse into the canals adjoining the aforementioned mills. He also remarked the abundance of the beautiful fresh water Zoophyte, *Plumatella repens*, which is found in both habitats of the Planorbis, and on the dead branches of which it seems to find its favourite food. Mr. Rogers said that since the year 1869 (when the mollusk was found in small quantity) it had increased its area of distribution and multiplied so much as to be likely to become one of the commonest of our local shells.—*Extracted from the Proceedings of the Society.*

BIBLIOGRAPHY.

ORNITHOLOGY & CONCHOLOGY
OF THE COUNTY OF DORSET.

By J. C. MANSEL-PLEYDELL, F.G.S.

This little work contains 120 pages, half of which are devoted to Conchology. The Introduction occupies 6 pages and describes some of the habits of several of the important genera, and treats of the relationships of our present fauna with those of preceding periods. It also furnishes the proportional number of the representative species found in Dorset of each of the 9 types into which Professor Forbes divided the British Marine Mollusca:—*viz.*

I. The **Lusitanian** type. The Dorset members of the Lusitanian or Mediterranean group which just impinge upon the British are five out of the fourteen cited by Forbes and Hanley.

II. The **South British** type, confined within a well-marked range along the southern and south-western coasts of England; eighteen out of twenty-two.

III. The **European** type, represented by species that are equally diffused and abundant in most parts of the British seas; all out of the forty-three.

IV. The **Celtic** type, a group especially characteristic of Great Britain, many of its members being of ancient origin and well known in the fossil state; thirty-nine out of forty-three.

V. The **British**, an assemblage of species little known elsewhere or even quite unknown out of the British seas. Of the seven species cited as representatives of the British type, being most abundant in Great Britain, and well known in a few localities elsewhere, Dorsetshire claims five.

VI. The **Atlantic** type, comprising Molluscs common on the western coasts of Britain, scarce in the Irish seas, and for the most part absent from the German Ocean; sixteen out of thirty-one.

VII. The **Oceanic** type, represented in Britain by the genus *Ianthina* and possibly *Scissurella crispata*, has no representative on our coast excepting the Cephalopods, which are ranked in this group.

VIII. The **Boreal** type, an assemblage of northern forms, many of which are either absent in the south, or become rarer as we proceed southwards; of the thirty-three cited by Forbes and Hanley, Dorsetshire has four.

IX. The **Arctic** type, comprising few of the most northern shells, of which none are found on the coasts.

Of the Land and Fresh-water shells, the author enumerates 71 species, 40 land and 31 fresh-water, but the occurrence of some of these he has not been able personally to verify.

There is an absence of some species which we should have expected to occur, but doubtless a more extended and closer search will reveal others, especially amongst the more minute species. We however hail it as a solid contribution to our better knowledge of the fauna of Dorset.

The following articles appear in the April number of the **Journal de Conchyliologie 1875.**

CROSSE, H.—Note sur le *Phyllaplysia Lafonti*, Fischer (Note on *P. Lafonti*, F.), pp. 101—104.

This very rare naked mollusk was observed by M. Crosse in the basin of Arcachon. It never swims, but crawls in a very similar way to a slug, progressing however very quickly. It adheres so firmly to any smooth surface that it is very difficult to detach it.

FISCHER, P.—Remarques sur la coloration générale des coquilles de la côte occidentale d'Amérique (Remarks on the general system of colouring of the shells of the West Coast of America), pp. 105—112.

As a general rule, whilst the shells of the Arctic seas are obscurely coloured, and those of temperate seas not very brilliant, the shells of the tropics are handsomely colored and ornamented with variegated spots, lines and bands. The West Coast of America forms however a striking exception from the number of shells of a black or very dark color, many bearing such appropriate names as “ater” “mæstus” “funerbris” “tristis” &c. Dr. Fischer gives a list of the most striking examples of this (from which however *Murex radix* is somewhat unaccountably omitted) and then proceeds to consider the causes which may have produced this funereal fauna. He mentions five—the narrow extent of the torrid region, the cold currents both North and South, the absence of coral reefs, the uniformly North and South direction of the coast, and the poverty of the terrestrial fauna; but he at the same time acknowledges that these circumstances are insufficient to account for the fact, and that a complete explanation has not yet been found.

FISCHER, P.—Des anomalies de l'opercule dans les genres *Volutharpa* et *Buccinum*. (On the anomalies presented by the opercula of *Volutharpa* and *Buccinum*.), pp. 112—114.

Of the specimens of *Volutharpa ampullacea* Middendorf, found in Behring's Straits, the majority have no operculum, but about 10 per cent bear traces of that organ, in the shape of a smooth and whitish surface, which is strikingly visible against the slaty black color of the rest of the foot, whilst 15 per cent have a well developed operculum, and moreover at an advanced period a sort of second operculum is formed underneath the first, Dr. Fischer compares these facts with Mr. Jeffreys' observations on the double and triple opercula of *Buccinum undatum*.

GLOYNE, C. P.—Notes supplémentaires sur les Mollusques terrestres de la Jamaïque (Supplementary notes on the terrestrial Mollusca of Jamaica), pp. 115—126.

The author had given a first list of the land-shells of Jamaica collected by himself in Vol. XX. of the Journal (pp. 26—47.) He now supplements it by a second list, containing additions, corrections, and species, which though not collected by himself, he can give the localities from trustworthy sources, pre-facing his paper by a few general geographical remarks.

There are 62 additional species enumerated, and one new species—*Adamsiella irrorata*, Gloyne, from Brownstown is described, as well as a new variety *pallida* of *Adamsiella Grayana* Pfr.

HIDALGO, J. G.—Supplément au Catalogue des Coquilles terrestres recueillies dans l'Amérique méridionale (Supplement to the Catalogue of Land-shells collected in South America) pp. 127—131.

In the first number of the Journal for 1870 the author had given a list of the land-shells collected in South America by the Spanish naturalists of the Pacific Expedition; He now publishes a supplement with additional species and corrections.

The following species are figured, *Succinea Peruviana*, Phillipi, (Pl. vii. f. 1); *Streptaxis uberiformis*, Pfeiffer, (f. 8); *Bulimus scularioides*, Phil. (f. 4); *B. Atacamensis*, Pfr. (f. 5); *B. Ochseni*, Dunker, (f. 2); *Pupa Pazi*, Hidalgo, (f. 7); and *Bulimus Colmeiroi* Hid. (f. 3); *Helix Baeziensis*, Hid., should take the name *Helix Cuzcana*, Phil. *Bulimus albicans*, Broderip, is considered a small sized variety of *B. albus*, Sowerby. The shell previously referred to *Bulimus Gibbonius*, Lea, is made a separate species, *B. Jumenezi*, Hid. *B. Montevidensis*, Pfr. should be *B. sporadicus*, Orbigny. *Cyclotus Fischeri*, Hid., is now considered a variety of *C. giganteus*, Gray; 211 species in all were collected by the Spanish naturalists, 29, of which were new.

FISCHER, P.—Note sur le *Trochus moniliferus*, Lamarck (Note on *T. moniliferus*, Lam.) pp. 131—133.

Lamarck described a fine shell in his private collection as *T. moniliferus*, and a good figure was given in Kiéner; Phillippi by a singular mistake applied the name to a large specimen of *T. annulatus*, Martyn. The habitat remained unknown for a long time, and Lischke having discovered the shell in Japan considered it new and described it as *T. Alvinæ*. The author establishes the synonymy, and as there is also a fossil shell of the Paris basin of nearly the same name—*T. monilifer*, Lam proposes for the latter the name of *T. dyscheres*.

CROSSE, H.—Note sur l'*Helix Leytensis*, Pfeiffer, des Philippines (Note on *H. Leytensis*, Pfr. from the Philippines), pp. 133—136.

The receipt by Dr. Hidalgo of two perfect specimens of this very rare shell, enables a good figure (Pl.vi. f.3) and description to be given. Both Reeve's and Pfeiffer's figures represent immature shells.

CROSSE, H.—Descriptions d'espèces de Mollusques inédites, provenant de la Nouvelle Calédonie (Descriptions of unpublished species of Mollusca from New Caledonia); pp. 136—141.

Diplomphalus Fabrei, Cr. (Pl. vi. f. 1) very near *D. Megei*, Lambert, Baie du Sud; *D. Megei*, Lambert, var. β , Baie du Sud; *Bulimus Alexander*, Cr. var. ϵ (Pl.vi. f.4); *Fossarus Caledonicus*, Cr. (Pl. vi. f. 6) Baie du Sud.

CROSSE, H.—Description d'un *Pupina* nouveau provenant du N.E. de l'Australie (Description of a new *Pupina* from the N. E. of Australia) pp. 141—143.

Pupina Pettardi Cr. (Pl.vi. f.5); and var. β (f.5a) near *P. Coxi*, Morelet.

CROSSE, H.—Diagnoses Molluscorum Novæ Calédonie incolarum (Diagnoses of Mollusca inhabiting New Caledonia); pp. 143, 144.

Helix Derbesiana and *H. Berlierei*.

Bibliography, and Palæontology pp. 144—194.

Under the head of "News" M. Crosse mentions the following items, pp. 194—196.

The Rabbi Mardochée has recently brought from Morocco a number of land-shells which prove that the Mediterranean fauna (Lusitanian of Woodward) extends to Cape Nun, at what particular point the West African fauna begins is as yet unknown.

Several instances of the vitality of Unionidæ, when removed from their native element, are mentioned.

Three Italian naturalists are now exploring New Guinea, Signor Beccari in the North and Signor d'Albertis and Tommasinelli in the South.

C. P. G.

Japanese Gastropoda.—A List of the Gastropoda collected in Japanese Seas, by Commander H. C. St. John, R.N.

By Edgar A. Smith, F.Z.S., of the British Museum—(Annals & Mag. Nat. Hist. June 1875; Series IV, Vol. XV., pp. 414—427)

This enumeration, which is to be continued, embraces the names and localities of 52 species of Gastropoda. Nineteen species are mentioned as new, the following being characterized ;

<i>Pleurotoma vertebra</i> ;	<i>Murex (Cerastoma) endermonis</i> ;
<i>P. Sancti-Ioannis</i> ;	<i>Euthria fuscolabiata</i> ;
<i>P. Jeffreysii</i> ;	<i>Fusus (Sipho?) manchuricus</i> ;
<i>P. chocolata</i> ;	<i>Nassa tenuis</i> ;
<i>P. inconstans</i> ;	<i>Nassa fuscolineata</i> ;
<i>P. tuberosa</i> ;	<i>Buccinum Jeffreysii</i> ;
<i>P. patruelis</i> ;	<i>Admete ovata</i> ;
<i>Bela iessoensis</i> ;	<i>A. globularis</i> ;

Full descriptions are promised to be given "elsewhere" of the following new species of *Terebridae* :

<i>Terebra albozonata</i> ;	<i>T. melanacme</i> ;
	<i>T. (Myurella) bathyraphe</i> .

Descriptions of some new Shells from Kerguelen's Island.—By Edgar A. Smith, F.Z.S. (Annals & Mag. Nat. Hist. July 1875; Ser. IV, Vol. XVI., pp. 67—73.

These are the undescribed species brought home by the Rev. A. E. Eaton, naturalist to the British Transit-of-Venus Expedition to Kerguelen's Island. It is intended to publish elsewhere complete and detailed accounts of all the specimens obtained, and brought home by him. Of mollusca the number is small, only about 20 species; but of these the proportion of new forms is large, and several of them very remarkable discoveries. One new genus, *Eatonia*, is characterized, and the following new species are briefly described :

- Struthiolaria mirabilis*, Swain's Bay ;
- Buccinopsis Eatoni*, Swain's Bay, and Royal Sound ;
- Trophon albolabratum*, Swain's Bay, and Royal Sound ;
- Littorina setosa*, Swain's Bay ;
- Rissoa Kergueleni*, On a sponge ;
- Eatonia Kerguelensis*, On a sponge ;

Eatonia caliginosa, Swain's Bay ;
E. subrufescens, On a sponge ;
Skenea subcanaliculata, On a sponge ;
Scissurella supraplicata, Swain's Bay ;
Solenella gigantea, Royal Sound ;
Yoldia subæquilateralis, Swain's Bay ;

On the Development of the Pteropoda.—By M. H. Fol.—Annals & Mag. Nat. Hist. June 1875 ; Ser. IV., Vol. XV., pp. 439—441. (Translated from the Comptes Rendus, Jany. 18th 1875, p. 19.)

Notes on an Examination of 4 species of Chitons, with reference to Posterior Orifices.—By Wm. H. Dall.—Annals & Mag. Nat. Hist., June 1875 ; Ser. IV., Vol. XV., pp. 442—443. (From the "Bulletin of the Essex Institute", Vol. VI., August, 1874.)

Capture of an Enormous Cuttle-Fish off Boffin Island, on the coast of Connemara.—By Thos. O'Connor—Zoologist, June 1875 ; S.S., Vol. X., pp. 4502 and 3.

Details given by the writer, who is a sergeant in the Royal Irish Constabulary at that Island.

Notice of a gigantic Cephalopod (*Dinoteuthis proboscideus*) stranded at Dingle, in Kerry, 200 years ago.—By A. G. More, F.L.S., &c.—Zoologist July 1875 ; S.S., Vol. X., pp. 4526—4531.

Life Histories of the Mollusca.—By A. S. Packard, jun. American Naturalist, May 1875, Vol. IX., pp. 282—307.

An elaborate illustrated article dealing with the classification of the mollusca, and the development of the several groups, *Lamellibranchiata*, *Cephalophora* and *Cephalopoda*.

MISCELLANEOUS NOTES.

A communication was read to the Zoological Society of London on the 20th of April from Mr. R. J. Lechmere-Guppy, on the occurrence of *Helix coactiliata* in Trinidad, & on the general distribution of the land and freshwater mollusca of that island. A second communication from Mr. Guppy, contained a note on a variety of *Bulimus constrictus* found in Venezuelan Guiana.

A note from Lieut.-Col. R. H. Beddome, on some new operculated land-shells from Southern India and Ceylon, was laid before the Zoological Society at its meeting on June 1st. The discoveries of true *Diplomatina* in Southern India, and of *Nicida* in Ceylon were alluded to as being of special interest.

At the same meeting a communication from Mr. G. French Angas, was read describing three new species of Australian Shells, under the names of *Helix Forrestiana*, *Helix Broughami* and *Euryta Brazieri*.

A communication from Mr. Henry Adams was also read on two new Land-shells: these were proposed to be named respectively *Eurycratera Farafanga*, found on a sandy plain in the South-East of Madagascar, near the Farafanga River, and *Pupinopsis Angasi*, from the Louisiade Archipelago, in the South-East of New Guinea.

Some time ago Prof. Michael Foster and Mr. A. G. Dew Smith read a paper before the Royal Society on the behavior of the hearts of Mollusks under the influence of electric currents.

We regret to announce the death of the distinguished French naturalist, Professor G. P. Deshayes, on the 9th of June last, after a long illness. He was well known as the author of the splendid work on the "Tertiary Mollusca," of the "Paris Basin," and other important conchological and palæontological publications

At a sale by auction, on the 29th of June last, by Mr. J. C. Stevens, of Covent Garden, of a collection of shells, which comprised specimens from the Norris and Dennison collections, including type shells, figured by Reeve, we notice that a beautiful specimen of *Cypræa aurantia* went for £3 5s. od.; a very fine well-marked specimen of *Conus zonatus*, for £2 5s. od.; a beautiful shell of *Harpa imperialis*, for £1 8s. od.; another for £1 17s. 6d.; an example of *Cypræa nivosa*, from the Norris collection, £6; the unique type specimen of *Conus racemosus*, for £3 15s. od.; *Conus zonatus*, for £2; a very beautiful specimen of *Conus nobilis* £3 5s. od.; besides a large number of lots including more than one species-

LIST OF THE MARINE SHELLS OF HASTINGS.

By A. W. LANGDON.

I have pleasure in sending the following list of sea shells from this coast. It is doubtless very imperfect, but it comprises all the species I have been able to hear of, since my attention was drawn to the subject a few months ago. I hope to hear of additions from time to time, and will not fail to communicate them.

The shore, in front of the town, and some miles to the east and west, is composed of shingle, from the wasting of the South Downs, with beds of sand and rock exposed at low tide.

Owing to the prevalence of strong S.W. winds, the beach is continually shifting, so that there is little opportunity for the growth of Mollusca, other than mussels, limpets, and purple-shells, within the reach of personal observation. But fortunately, for Naturalists, there exists a shoal, locally termed the "Diamond," a few miles to the S.E., which is much frequented by fishermen, and which yields a great variety of crustacea, with a fair sprinkling of mollusca. It is from this source that most of the following species were obtained. The winter and early spring is the time when the boats most usually resort to the "Diamond," and then the shells may be procured from one or two local dealers, whose little "curiosity shops" in the immediate neighbourhood of the Fish market, are probably known to most visitors at Hastings.

1. *Anomia ephippium*, L.—Occasionally brought in by fishermen; was formerly common.
2. *Ostrea edulis*, L.—Very fine specimens of the solitary variety, from the Diamond ground.
3. *Pecten pusio*, L.—A few detached valves have been picked up on the beach: it is tolerably common from the scallop beds off Brighton.
4. *P. varius*, L.—Not uncommon, but seldom large or well coloured.
5. *P. opercularis*, L.—Extremely abundant on the Diamond ground, and of every colour—white, violet, orange, &c. The local name is *squin* or *squinia*. It is eaten by all classes.

6. *Pecten opercularis* var. *lineata*.—From the same locality ; not uncommon.
7. *P. maximus*, *L.*—Common, and sometimes very large.
8. *Lima hians*, *Gmelin*.—A single valve of a young shell was brought to me, attached to the roots of *Antennularia antennina*.
9. *Mytilus edulis*, *L.*—Most abundant in the rocks, and common food of the *Uraster rubens* and *Purpura lapillus*, but of small size. Larger shells are sometimes brought in.
10. *Do.* var. *pellucida*.—Occasionally amongst others on the rocks.
11. *M. modiolus*, *L.*—From deeper water : uncommon.
12. *M. barbatus*, *L.*—Frequently attached to sea weeds and zoophytes thrown up by the waves.
13. *Modiolaria marmorata* *Forbes*.—Sometimes attached to *Pecten maximus* ; also at the roots of zoophytes, &c.
14. *Nucula nucleus*, *L.*—Not common in good condition.
15. *N. nitida*, *G. B. Sowerby*.—Sometimes brought in by Trawlers.
16. *Pectunculus glycymeris*, *L.*—Very common on the Diamond ground ; of large size, and well coloured.
17. *Arca lactea*, *L.*—A single valve was found amongst the roots of *Antennularia*.
18. *Cardium echinatum*, *L.*—Common, brought in by Trawlers.
19. *C. edule*, *L.*—The shore is too rocky for this species to be very abundant.
20. *Do.* var. *rustica*.—Mud-stained specimens.
21. *C. Norvegicum*, *L.*—Common.
22. *Cyprina islandica*, *L.*—A few very large shells have been brought in by deep sea fishermen.
23. *Tapes virgineus*, *L.*—Moderately common and well marked.
24. *T. Pullastra*, *Montagu*.—Seldom in good condition.
25. *Do.* var. *perforans*.—In rock perforations.
26. *Lucinopsis undata*, *Pennant*.—I have only met with 2 specimens—both milk-white.
27. *Tellina crassa*, *Gmelin*.—Not uncommon, from the Diamond ground, and sometimes very large and fine.
28. *T. Balthica*, *L.*—Usually lemon-coloured.
29. *T. tenuis*, *Da Costa*.—Not uncommon at Hastings.
30. *T. fabula*, *Gronovius*.—Do.
31. *Donax vittatus*, *Da Costa*.—Extremely common : dead shells often strew the beach in hundreds.
32. *Mactra solida*, *L.*—Rare on this coast.
33. *Do.* var. *elliptica*.—Do.

34. *Mactra subtruncata*, *Da Costa*.—Detached valves.
35. *M. stultorum*, *L*.—Common.
36. *Do. var. cinerea*.—Rare.
37. *Lutraria elliptica*, *Lamarck*.—Occasionally brought in by Trawlers, but usually dead.
38. *L. oblonga*, *Chemnitz*.—Detached valves have been picked up on the beach.
39. *Scrobicularia prismatica*, *Montagu*. — Occasionally found on the Diamond ground.
40. *S. alba*, *Wood*.—Not uncommon.
41. *S. piperata*, *L*.—Dead shells are common in a bed of mud or clay, near St. Leonard's : probably it is to be found alive.
42. *Solen ensis* *L*.—Usually very small.
43. *S. vagina*, *L*.—Not common.
44. *Corbula gibba*, *Oliv*.—Detached valves.
45. *Mya truncata*, *L*.—Fine specimens are occasionally brought in by Trawlers. It is rare at Hastings, but common a few miles to the eastward.
46. *M. Binghami*, *Turton*.—Rare ; from deep water.
47. *Saxicava rugosa*, *L*.—Not common here.
48. *Pholas dactylus*, *L*.— Dead shells are abundant in perforations in the rocks. I have not met with it living.
49. *P. candida*, *L*.—Very common in the rocks exposed at low water.
50. *P. parva*, *Pennant*.—Much less frequent than the last.
51. *P. crispata*, *L*.—Dead shells.
52. *Teredo* *sp.*—In floating wood.
53. *Dentalium entalis*, *L*.—Dead shells are very common.
54. *Chiton fascicularis*, *L*.—On rocks at low water.
55. *C. cinereus*, *L*.—*Do.*, common.
56. *Patella vulgata* *L*.—Most abundant, but of little beauty. It is sold in the streets of Eastbourne for food, but does not appear to be eaten at Hastings.
57. *Fissurella Græca*, *L*.—Dead shells—uncommon.
58. *Trochus magus*, *L*.—Dead shells are sometimes brought in by trawlers in great numbers.
59. *T. cinerarius*, *L*.—From deep water : small shells, perhaps the var. *electissima*.
60. *T. granulatus*, *Born*.—From the Diamond ground : rare.
61. *T. ziziphinus*, *L*.—Common.
62. *Lacuna crassior*, *Montagu*.—Dead shells.
63. *Littorina obtusata*, *L*.—Common on rocks covered with Fuci.
64. *L. littorea*, *L*.—White shells sometimes occur. This species is not so abundant as at most places. The shops in the town are supplied from Whitstable, &c.
65. *Scalaria communis*, *Lam*.—Occasionally picked up dead.

66. *Natica catena*, *Da Costa*.—Common, but seldom fine. Burrows in sand at verge of low water.
67. *N. Alderi*, *Forbes*.—Brought in by trawlers.
68. *Purpura lapillus*, *L.*—On rocks at low water. Next in abundance to the limpet and mussel. The local name is "Man-sucker." It is eaten in quantities by the lower classes.
69. *Buccinum undatum*, *L.*—Sometimes very large.
70. *Do. monstr. sinistrorsum*.—Very rare; I have only heard of two specimens.
71. *Do. monstr. acuminatum*.—Small shells, with the upper whorls flattened. Rare.
72. *Murex erinaceus*, *L.*—Not uncommon.
73. *Nassa reticulata*, *L.*—Sometimes brought in by trawlers in great numbers.
74. *N. incrassata*.—Not so common as the last.
75. *Pleurotoma turricula*, *Montagu*.—Dead shells: not very common.
77. *Philine aperta*, *L.*—A single specimen, taken, I believe, from the stomach of a fish.
78. *Loligo vulgaris*, *Lam.*—Common.
79. *Sepiola Rondeleti* *Leach*.
80. *Sepia officinalis*, *L.*—Common.

Reversed form of *Helix hortensis* at Bristol.—In the early part of May I found a specimen of a sinistral *Helix hortensis*; it was in company with many *Helix nemoralis* and *Helix hortensis* of the ordinary form, in a hedge not far from Coombe Dingle near Bristol. Last year in the spring my sister Miss Jessie Hele found an immature specimen of the same uniform yellow color as the specimen I found (which she has since reared to maturity) at Keynsham, which is about 10 miles from Bristol.

The country round Bristol is rich in land shells. We have found *Helix fusca*, *Helix aspersa* var. *exalbida* and many other good species in the neighbourhood.—FANNY M. HELE, June, 1875.

Local shells at Bank Wood near Wakefield.—The following rare and local shells have been found at Bank Wood near Wakefield, by Mr. Jackson of Midgley; *Helix fusca*, *Vertigo edentula* var. *columella*, *Cochlicopa tridens* var. *crystallina*, and other more common forms. The variety of *C. tridens* was found amongst numerous specimens of the type, with which they were connected by several gradations of colour from white to deep rufous brown.—GEORGE TAYLOR, July 1875.

CONCHOLOGICAL DIFFICULTIES; OR, SPECIES
VERSUS VARIETIES.

By EDWARD SIMPSON.

In looking over a collection of shells, or in reading the description of them by various authors, the student is apt to get greatly confused, and to wonder why there are so many species, and what can be the principle upon which they are formed. In order to explain what I mean, I propose going through the works of several authors, and comparing them together, I will first give an extract from Jeffrey's *British Conchology*, vol. i., page xvii. of the introduction, where he says "Certain definite forms, called species, exist; and that they constitute, more or less extensive groups of individuals, which resemble each other, as well as their parents and offspring, to the same extent as we observe in the case of our own kind. These groups, to deserve the name of species, must be distinct from others; because, if any of them are so intimately blended together by intermediate links, so as to make the line of separation too critical, the test fails, and a subordinate group, or what is called a 'variety,' is the result. For this reason it is indispensably necessary to compare as great a number of individuals as possible; and especially a series of different ages and sizes, commencing *ab ovo*, as well as specimens collected from various localities." Hethen goes on to speak of the right of every naturalist: "To follow the bent of his own discretion or inclination in the extension or reduction of species, subject only to the opinion of his scientific compeers," and then speaks of varieties: "Besides species, and holding a subordinate rank to them in the great host of Nature's works, are certain forms, called 'varieties,' which are not less definite, but more difficult to separate from their typical or specific form. They are off-shoots of species, and originate in some peculiarity of climate, situation, composition of soil, or water which they inhabit; the nature or supply of food, and various other conditions. The characters by which they usually differ from species consist of size, comparative proportions of different parts, colour, and degree of sculpture, and the investigation of forms thus changed, or modified is often extremely perplexing." * * * * * "Varieties are of two kinds—permanent and local. The former are called 'races,' and have many of the characters of true or typical species with which they associate." And further on he adds: "I believe it may now be considered a well-established rule that all distinct groups of individuals living together, and having common feeding ground, and which are not connected or blended with each other by insensible gradation, are *prima facie* entitled to the rank of species. A contrary opinion used formerly to be entertained by some naturalists, and it was not unusual to found a claim to specific distinction on the fact that the specimen thus distinguished, did not occur with

the species from which it was proposed to separate them. they apparently forgot that the very difference of locality or habitat, with its accompanying condition, caused the variation in question."—I wish to call particular attention to the extract A, as I shall have occasion to use it as a test in several cases. First of all, I take the genus *Succinea*. This, according to Reeve and Jeffreys, consist of three species, *S. putris*, *elegans*, and *oblonga* (Forbes and Hanley make but two). But besides these species, Jeffrey gives two varieties of *elegans* and three of *putris*. Speaking of *elegans*, he says, "It forms a passage through its second variety from the last (*putris*) to the next species (*oblonga*). The two varieties of *elegans* are smaller than the type, but this has not anything to do with it, because, as he says, when speaking of the genus *Pisidium* (page 18) "Size, substance, sculpture, and lustre, are not of much account, as they mainly depend on the chemical ingredients of the water inhabited by the molluscs, as well as their supply of food." His reasoning, of course, is not limited to any particular genus, but applies alike to all. Now, remembering what was stated above by him, that *elegans* forms a passage from the first to the third species by its second variety (*ochracea*). After applying his own test, it certainly appears (A) that these three forms are so "intimately blended together by intermediate links," that they cannot be fairly considered a distinct species.

Every conchologist is aware of the difficulty of distinguishing some of the species of *Zonites*. The distinctions between some of them are so very trifling, that it requires much more faith than I am possessed of, to believe that they are really distinct. *Z. purus* resembles *Z. radiatulus* so closely, that Reeve observes that "A careful application of the lens is necessary to bring out its specific characters in obvious relief." Jeffreys (p. 116) says, "*Z. radiatulus* resembles *Z. purus* 'in the size and form of the shell; but the peculiar sculpture more glossy appearance, and narrower umbilicus of the present species will easily distinguish it from *Z. purus*.'" But he has already stated (p. 18) that "size, substance, sculpture, and lustre, are not of much account." And we shall see as we proceed to another genus, that these very distinctions are not even allowed to constitute a variety. Few shells have been the cause of greater controversy than *Helix nemoralis*, and *hortensis*; are they distinct species or not? Gray, Norman, and others, unite them. Jeffreys (p. 188) says he never found *H. nemoralis* and *hortensis* living together, and in speaking of a variety of *Limnæa palustris* (p. 114), he says, as a reason for not considering it a species, "that it is not found in company with any other form." I do not clearly understand this reasoning. Then supposing *H. nemoralis* and *hortensis* to be found together (as they certainly may be), it would appear to prove that they were specifically distinct, even taking Jeffrey's own definition of a species, which is a group of individuals which resemble each other as well

as their parents and offspring to the same extent as we observe in the case of our own kind." (p. 17) Whilst if they are *not* found together, and *H. hortensis* is only a variety, how is it that the variety becomes permanent? Do not shells follow the same laws as other animals in returning back to the original stock, or in throwing off other varieties which differ from the variety itself as much as it differs from the typical species? But, as *H. hortensis*, when living by themselves, propagate animals resembling themselves, and those from which their parents sprang, they also, in conformity with the above definition, must be considered as species. Another reason Jeffreys gives for not considering them distinct species, is that they are connected by the intermediate form, *hybrida* but as we shall see presently, the fact of there being no intermediate form is not always allowed to separate species. Some of the specimens of *H. rufescens* & *hispida* are exactly alike to my limited powers of observation. I have compared them for a long time without being able to find any distinguishing character. In addition to these, there is *H. depilata* of Gray, and *H. concinna* of Jeffreys. The latter one differs from *hispida* in being more glossy, and never globose, and in the umbilicus being considerably more open. These constitute two species. On the other hand, *H. rufescens* has its spire short and blunt; and another, as described by Jeffreys, has a smaller shell, and the spire more raised. But this is only made a variety (*H. rufescens* var. *minor*). It is thus next to impossible to discover the principle upon which conchologists proceed in manufacturing their species. This will appear more strongly in two other genera—first, the genus *Clausilia*, here there are four species, one of which *C. laminata* is separated at once from the rest, by Jeffreys, in consequence of its shell being nearly smooth, and in having its clausilium notched. It very much resembles *C. biplicata*, but differs from it in its teeth, spire, and other details, which may, or may not, entitle it to be considered a distinct species from *biplicata*. But distinctions such as these do not *always* make a species. Thus in *Carychium minimum*, Reeve (p. 127) says, "Authors are pretty well agreed that all the varieties of the little glassy shell, known throughout Britain as *C. minimum*, belong to one and the same species. Some specimens are smooth, others are obviously finely striated, and the teeth are more conspicuously developed in some specimens than in others, while the whorls vary a little in their shorter or more elongated mode of convolution."

Neither Jeffreys, Gray, nor Forbes and Hanley give any varieties. The latter mentions that it has a variety, but gives it no name. Why are not some of the differences sufficient, at all events, to make a variety? In *Azeca* and *Zua* differences slight as the above, constitute two distinct species, according to Jeffreys—two genera according to other conchologists. The former united them in one genera, under the name of *Cochlicopa*, considering that the fact of *Azeca* having teeth, and *Zua* none, is not sufficient to

constitute two distinct genera. As illustrations, he gives *Helix obvolvata*, and some of the *Vertigoes*, which differ from other members of the genera in being toothed or notched. Reeve separates them, and says of *Azece* "that it is a mollusk of different distribution and habit, and the shell has a totally distinct typical structure." (p. 94.)—On the other hand, Jeffreys makes 2 distinct genera *Balia* and *Clausilia*, because the latter has a clausilium, or twisted internal plate, and has also oblique teeth or folds which contract the aperture of the shell. In *Balia*, the clausilium is altogether wanting, and the mouth has no teeth or folds, though it is sometimes furnished with a tubercular tooth, formed in the columella or pillar. In the genus *Planorbis*, I mention the two species, *carinatus* and *complanatus*. This latter shell may be distinguished from the former, as Jeffreys says (p. 92)—"By its narrower and more rounded whorls, as well as by the keel being placed below, instead of in or towards the middle of the periphery. It is usually larger and thicker, and is more generally diffused and plentiful." He also gives a variety of *carinatus*, viz. *disciformis*, which is often found mixed with the last (*carinatus*)." (Linn Trans, Vol. xvi., p. 385, by Jeffreys) and of which he says, "The shell is flatter and thinner, of a yellowish colour, having the last whorl larger in proportion to the others, and the keel more prominent and sharp, and placed exactly in the middle." (p. 90.) He also says (p. 92), "That *carinatus* and *complanatus*, are connected together through the *P. submarginatus* of Cristofori and Jan, alias the *P. intermedius* of Charpentier."—Mr. Alder, speaking of *disciformis* and *carinatus*, says, "I cannot perfectly understand the distinction between them." (Gray, p. 239). Now if *carinatus* and *complanatus* are ranked as two species, mainly owing to the difference in the position of the keel, why is not *disciformis* in which the position of the keel is as different from either of these two, as they are from each other—also ranked as a third species! But it seems to me that as it is not so considered, if we apply Mr. Jeffrey's own test, one of these two must give way as a species, and be considered only as a variety, for these three shells certainly appear to me, by his own language (A), "to be so intimately blended together by the intermediate links as to make the line of separation too critical," and therefore the test fails, so that taking *P. carinatus* as the type, the other two, namely, *complanatus* and *disciformis*, can only be considered as varieties of it.*

In the genus *Limnaea*, we meet with some very striking differences in the species, but which, for some cause or other, only entitle the owners to be considered as varieties. Then of *L. peregra*

NOTE.—In speaking of the *Helix nemoralis* and *hortensis*, Jeffreys considers that the variety *hybrida* connects the two, and that therefore they are not distinct species; but here, although *P. carinatus* and *complanatus* have an intermediate form in *disciformis*, it is in this case not allowed to make any difference, and the two species referred to remain as distinct.

Jeffreys gives fourteen varieties. Some of these may clearly be attributed to local circumstances. There are some stated to have been procured from rivers, others from lakes, others from marshes by the sea coast, and others again have been "thrown up by the tide at the mouth of rivers". The most extraordinary variety (not confined to this species) in my humble opinion is *decollata*, in which the "shell is more or less eroded, spire truncate" so that the fact of a shell being *eroded* gives it the title to rank as a variety!. In his Introduction p. II, Mr. Jeffreys gives several reasons which may account for erosion. I have noticed the erosion in specimens of *L. stagnalis* kept in confinement in my aquarium, which in course of time have been converted by erosion (by whatever cause produced) into *L. stagnalis* var *decollata*, a variety which I perceive is unknown to Mr Jeffreys.

But my paper has already exceeded the limits which I intended so that I must leave the examination of the genera and species to your readers, and I shall be very glad if some of them can help me to remove the difficulties which perplex my mind as to what *really* constitutes the difference between a species and a variety, and if they will also make clear to me what is the principal upon which the differences are formed

THE GENUS EATONIA.

Our readers will find, on referring to the Bibliographical Notice of New Shells from Kerguelen's Island at p. 86 of this number, a mention of a new Genus which has been characterized under the name of **Eatonia** by Mr. Edgar A. Smith.

The name has however been pre-occupied by Hall in 1859 to designate a genus of fossil Brachiopoda, in compliment to the American Prof. Amos Eaton. *Vide*—Ralph Tate's appendix to Woodward's "Manual of the Mollusca", p. 59.

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